

SEQUENCE LISTING

<110> BOCK, THOMAS
TILLMAN, HANS
MANNS, MICHAEL
TRAUTWEIN, CHRISTIAN
LOCARNINI, STEPHEN ALISTER
TORRESI, JOSEPH

<120> VIRAL VARIANTS AND USES THEREFOR

<130> 4420.000600

<140> 09/877,340

<141> 2001-06-08

<150> 60/210,395

<151> 2000-06-09

<160> 18

<170> PatentIn version 3.1

<210> 1

<211> 76

<212> PRT

<213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> X = L, R, or I

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> X = E or D

<220>

<221> MISC_FEATURE

<222> (9)..(9)

<223> X = T, D, A, N, or Y

<220>

<221> MISC_FEATURE

<222> (10)..(10)

<223> X = E or D

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> X = E, K, or Q

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> X = H, R, or N

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> X = I or T

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> X = A or S

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> X = T or R

D'
<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> X = A, T, or S

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> X = R or T

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> X = V or G

<220>
<221> MISC_FEATURE
<222> (55)..(55)
<223> X = S, I, T, N, or V

<220>
<221> MISC_FEATURE

<222> (56)..(56)
 <223> X = T,S,H, or Y

<220>
 <221> MISC_FEATURE
 <222> (57)..(57)
 <223> X = R, H, K, or Q

<220>
 <221> MISC_FEATURE
 <222> (69)..(69)
 <223> X = Q or P

<400> 1

Leu Xaa Xaa Asp Trp Gly Pro Cys Xaa Xaa His Gly Xaa His Xaa Ile
 1 5 10 15
 Arg Xaa Pro Arg Thr Pro Xaa Arg Val Xaa Gly Gly Val Phe Leu Val
 20 25 30
 Asp Lys Asn Pro His Asn Thr Xaa Glu Ser Xaa Leu Xaa Val Asp Phe
 35 40 45
 Ser Gln Phe Ser Arg Gly Xaa Xaa Xaa Val Ser Trp Pro Lys Phe Ala
 50 55 60
 Val Pro Asn Leu Xaa Ser Leu Thr Asn Leu Leu Ser
 65 70 75

<210> 2
 <211> 181
 <212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> X = N or D

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> X = I or P

<220>
 <221> MISC_FEATURE
 <222> (29)..(29)
 <223> X = I or V

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> X = S or D

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> X = T or N

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> X = R or N

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> X = N or I

①
<220>
<221> MISC_FEATURE
<222> (48)..(48)
<223> X = ANY AMINO ACID

<220>
<221> MISC_FEATURE
<222> (50)..(50)
<223> X = N, Y, or H

<220>
<221> MISC_FEATURE
<222> (52)..(52)
<223> X = H or Y

<220>
<221> MISC_FEATURE
<222> (53)..(53)
<223> X = G or R

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> X = ANY AMINO ACID

<220>
<221> MISC_FEATURE

<222> (55)..(55)
<223> X = ANY AMINO ACID

<220>
<221> MISC_FEATURE
<222> (56)..(56)
<223> X = ANY AMINO ACID

<220>
<221> MISC_FEATURE
<222> (57)..(57)
<223> X = D or N

<220>
<221> MISC_FEATURE
<222> (60)..(60)
<223> X = D or N

<220>
<221> MISC_FEATURE
<222> (61)..(61)
<223> X = S or Y

<220>
<221> MISC_FEATURE
<222> (65)..(65)
<223> X = N or Q

<220>
<221> MISC_FEATURE
<222> (71)..(71)
<223> X = L or M

<220>
<221> MISC_FEATURE
<222> (75)..(75)
<223> X = K or Q

<220>
<221> MISC_FEATURE
<222> (77)..(77)
<223> X = Y or F

<220>
<221> MISC_FEATURE
<222> (79)..(79)
<223> X = R or W

<220>
<221> MISC_FEATURE
<222> (84)..(84)
<223> X = Y or L

<220>
<221> MISC_FEATURE
<222> (85)..(85)
<223> X = S or A

<220>
<221> MISC_FEATURE
<222> (89)..(89)
<223> X = I or V

<220>
<221> MISC_FEATURE
<222> (95)..(95)
<223> X = I or L

D' <220>
<221> MISC_FEATURE
<222> (99)..(99)
<223> X = V or G

<220>
<221> MISC_FEATURE
<222> (114)..(114)
<223> X = C or L

<220>
<221> MISC_FEATURE
<222> (115)..(115)
<223> X = A or S

<220>
<221> MISC_FEATURE
<222> (116)..(116)
<223> X = V or M

<220>
<221> MISC_FEATURE
<222> (117)..(117)
<223> X = V or T

<220>
<221> MISC_FEATURE

<222> (118)..(118)
<223> X = R or C

<220>
<221> MISC_FEATURE
<222> (122)..(122)
<223> X = F or P

<220>
<221> MISC_FEATURE
<222> (125)..(125)
<223> X = L or V

<220>
<221> MISC_FEATURE
<222> (126)..(126)
<223> X = A or V

<220>
<221> MISC_FEATURE
<222> (128)..(128)
<223> X = S or A

<220>
<221> MISC_FEATURE
<222> (133)..(133)
<223> X = V, L, or M

<220>
<221> MISC_FEATURE
<222> (138)..(138)
<223> X = K or R

<220>
<221> MISC_FEATURE
<222> (139)..(139)
<223> X = S or T

<220>
<221> MISC_FEATURE
<222> (140)..(140)
<223> X = V or G

<220>
<221> MISC_FEATURE
<222> (141)..(141)
<223> X = Q or E

<220>
<221> MISC_FEATURE
<222> (143)..(143)
<223> X = L, S, or R

<220>
<221> MISC_FEATURE
<222> (145)..(145)
<223> X = S or F

<220>
<221> MISC_FEATURE
<222> (147)..(147)
<223> X = F or Y

<220>
<221> MISC_FEATURE
<222> (148)..(148)
<223> X = T or A

<220>
<221> MISC_FEATURE
<222> (149)..(149)
<223> X = A or S

<220>
<221> MISC_FEATURE
<222> (150)..(150)
<223> X = V or I

<220>
<221> MISC_FEATURE
<222> (151)..(151)
<223> X = T or C

<220>
<221> MISC_FEATURE
<222> (152)..(152)
<223> X = N or S

<220>
<221> MISC_FEATURE
<222> (153)..(153)
<223> X = F or V

<220>
<221> MISC_FEATURE

<222> (156)..(156)
 <223> X = S or D

<220>
 <221> MISC_FEATURE
 <222> (157)..(157)
 <223> X = L or V

<220>
 <221> MISC_FEATURE
 <222> (164)..(164)
 <223> X = N or Q

<220>
 <221> MISC_FEATURE
 <222> (179)..(179)
 <223> X = V or I

<400> 2

Ser Xaa Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
 1 5 10 15

Xaa Pro Leu His Pro Ala Ala Met Pro His Leu Leu Xaa Gly Ser Ser
 20 25 30

Gly Leu Xaa Arg Tyr Val Ala Arg Leu Ser Ser Xaa Ser Xaa Xaa Xaa
 35 40 45

Asn Xaa Gln Xaa Xaa Xaa Xaa Xaa Xaa Leu His Xaa Xaa Cys Ser Arg
 50 55 60

Xaa Leu Tyr Val Ser Leu Xaa Leu Leu Tyr Xaa Thr Xaa Gly Xaa Lys
 65 70 75 80

Leu His Leu Xaa Xaa His Pro Ile Xaa Leu Gly Phe Arg Lys Xaa Pro
 85 90 95

Met Gly Xaa Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala
 100 105 110

Ile Xaa Xaa Xaa Xaa Xaa Arg Ala Phe Xaa His Cys Xaa Xaa Phe Xaa
 115 120 125

Tyr Met Asp Asp Xaa Val Leu Gly Ala Xaa Xaa Xaa Xaa His Xaa Glu
 130 135 140

Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Leu Xaa Xaa Gly Ile His
 145 150 155 160

Leu Asn Pro Xaa Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met
 165 170 175

Gly Tyr Xaa Ile Gly
180

<210> 3
<211> 32
<212> PRT
<213> Hepatitis B virus

<220>
<221> MISC_FEATURE
<222> (1)..(32)
<223> SYNTHETIC

<400> 3

Thr Gly Pro Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr Cys
20 25 30

<210> 4
<211> 89
<212> PRT
<213> Hepatitis B virus

<220>
<221> MISC_FEATURE
<222> (1)..(89)
<223> SYNTHETIC

<400> 4

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
1 5 10 15

Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
20 25 30

His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
35 40 45

Gly Val Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
50 55 60

Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
65 70 75 80

Met Asp Asp Val Val Leu Gly Ala Lys
85

<210> 5
<211> 32
<212> PRT
<213> Hepatitis B virus

<220>
<221> MISC_FEATURE
<222> (1)..(32)
<223> SYNTHETIC

<400> 5

Thr Gly Pro Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Arg Asn Cys Thr Cys
20 25 30

<210> 6
<211> 32
<212> PRT
<213> Hepatitis B virus

<220>
<221> MISC_FEATURE
<222> (1)..(32)
<223> SYNTHETIC

<400> 6

Thr Gly Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr Cys
20 25 30

<210> 7
<211> 89
<212> PRT
<213> Hepatitis B virus

<220>
<221> MISC_FEATURE
<222> (1)..(89)
<223> SYNTHETIC

<400> 7

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15
 Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30
 His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45
 Gly Val Gly Leu Ser Pro Phe Leu Met Ala Gln Phe Thr Ser Ala Ile
 50 55 60
 Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80
 Met Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 8
 <211> 89
 <212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (1)..(89)
 <223> SYNTHETIC

<400> 8

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15
 Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30
 His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45
 Gly Val Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
 50 55 60
 Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80
 Val Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 9
 <211> 89
 <212> PRT
 <213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(89)

<223> SYNTHETIC

<400> 9

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15

Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30

His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45

Gly Val Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
 50 55 60

Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80

Ile Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 10

<211> 32

<212> PRT

<213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(32)

<223> SYNTHETIC

<400> 10

Thr Gly Pro Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
 1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Arg Asn Cys Thr Cys
 20 25 30

<210> 11

<211> 89

<212> PRT

<213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(89)
 <223> SYNTHETIC

<400> 11

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15

Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30

His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45

Gly Val Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
 50 55 60

Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80

Ile Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 12
 <211> 32
 <212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (1)..(32)
 <223> SYNTHETIC

<400> 12

Thr Gly Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
 1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr Cys
 20 25 30

<210> 13
 <211> 89
 <212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (1)..(89)
 <223> SYNTHETIC

<400> 13.

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15
 Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30
 His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45
 Gly Val Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
 50 55 60
 Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80
 Ile Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 14

<211> 89

<212> PRT

<213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(89)

<223> SYNTHETIC

<400> 14

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15
 Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30
 His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45
 Gly Val Gly Leu Ser Pro Phe Leu Met Ala Gln Phe Thr Ser Ala Ile
 50 55 60
 Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80
 Val Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 15

<211> 32

<212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (1)..(32)
 <223> SYNTHETIC

<400> 15

Thr Gly Pro Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
 1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Arg Asn Cys Thr Cys
 20 25 30

<210> 16
 <211> 89
 <212> PRT
 <213> Hepatitis B virus

<220>
 <221> MISC_FEATURE
 <222> (1)..(89)
 <223> SYNTHETIC

<400> 16

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
 1 5 10 15

Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
 20 25 30

His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
 35 40 45

Gly Val Gly Leu Ser Pro Phe Leu Met Ala Gln Phe Thr Ser Ala Ile
 50 55 60

Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
 65 70 75 80

Val Asp Asp Val Val Leu Gly Ala Lys
 85

<210> 17
 <211> 32
 <212> PRT
 <213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(32)

<223> SYNTHETIC

<400> 17

Thr Gly Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Met
1 5 10 15

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr Cys
20 25 30

<210> 18

<211> 89

<212> PRT

<213> Hepatitis B virus

<220>

<221> MISC_FEATURE

<222> (1)..(89)

<223> SYNTHETIC

<400> 18

Asn Gln Tyr Gly Thr Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln
1 5 10 15

Leu Tyr Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Trp Lys Leu
20 25 30

His Leu Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met
35 40 45

Gly Val Gly Leu Ser Pro Phe Leu Met Ala Gln Phe Thr Ser Ala Ile
50 55 60

Cys Ser Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr
65 70 75 80

Val Asp Asp Val Val Leu Gly Ala Lys
85

1
D
concl'd.